UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
650 Capitol Mall, Suite 5-100
Sacramento, California 95814-4700

Refer to NMFS ECO #: WCRO-2022-02869

March 23, 2023

Ms. Kaitlyn Ames
Senior Project Manager, Special Projects Branch
U.S. Army Corps of Engineers, Regulatory Division/Sacramento District
1325 J Street, Room 1350
Sacramento, California 95814

Electronic transmittal only

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the South Delta Temporary Barriers Project

Dear Ms. Ames:

This letter responds to your October 12, 2022, request for initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) for the subject action. Your request qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, your proposed action and its potential effects to listed species and designated critical habitat. We also received your request for consultation on potential effects to essential fish habitat (EFH) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

We reviewed the U.S. Army Corps of Engineers (Corps) consultation request and related initiation package, including a Biological Assessment (BA) (ICF ESA Joint Venture 2022), prepared in support of the proposed South Delta Temporary Barriers Project for operational seasons 2023-2027 (Project, SPK-2001-00121). Where relevant, we have adopted the information and analyses you have provided and/or referenced but only after our independent, science-based evaluation confirmed they meet our regulatory and scientific standards. Specifically, we received additional information and documents from the California Department of Water Resources (DWR), the Project applicant.

The consultation history of the use of seasonal agricultural barriers in the South Delta began in 1991 and includes several consultations, take exemptions, and permits issued by the Corps. DWR is currently pursuing a multi-year permit from the Corps under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act to cover the construction, operation, and removal of the Project.

This biological opinion analyzes the effects of the Project on Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley (CV) spring-run Chinook salmon

(*O. tshawytscha*), California Central Valley (CCV) steelhead (*O. mykiss*), the Southern Distinct Population Segment (DPS) of North American green sturgeon (*Acipenser medirostris*), and the designated critical habitats for CCV steelhead and the Southern DPS of North American green sturgeon. A complete administrative record is located at the NMFS California Central Valley Office.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 FR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. As a result, the 2019 regulations are once again in effect, and we are applying the 2019 regulations here. For purposes of this consultation, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

Seasonal agricultural barriers have been installed annually in the South Delta since approximately 1963 and would be installed and operated similarly to the previous iterations permitted and consulted on in 2013 and 2018. The proposed Project would consist of the annual construction and removal of three rock barriers: the Middle River (MR), Old River near Tracy (ORT), and Grant Line Canal (GLC) barriers. The Head of Old River rock barrier that was proposed and consulted on as part of the South Delta Temporary Barriers Project in the past is not proposed in this consultation. Construction activities for all of the barriers would begin as early as May 1 and removal would be completed no later than November 30 of each year. Specific information detailing the locations and activities associated with the construction, operation, and removal of the barriers, including equipment and methods used, installation and operation schedules, and conservation measures employed, is provided on pages 5 through 19 of the BA, and is incorporated here by reference.

The proposed installations for the Project would additionally include the ability to periodically remove sediment at the three barriers sites. Sediment removal may be conducted as necessary during the Project term to prepare for barrier construction, barrier removal, or culvert replacement. The removal of sediment would be limited to the minimum amount necessary to allow for barrier installation, barrier removal, or culvert replacement, and would not extend beyond 200 feet in any direction from each individual barrier footprint. Sediment removal would take no longer than 21 days and would be conducted during the barrier construction period and before or during barrier removal. The frequency and quantity of sediment to be removed would not be determined until site conditions are checked prior to construction each year. Additional details on the proposed sediment removal are provided on page 6 of the BA, and are incorporated here by reference.

We examined the status of each species that would be adversely affected by the proposed action to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. We also examined the condition of critical habitat throughout the designated area and discuss the function of the physical or biological features essential to the conservation of the species that create the conservation value of that habitat. The status of the species and critical habitat in the action area is provided in the Environmental Baseline section on pages 60 through 68 of the BA, and incorporated here by reference.

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). As provided on pages 6 and

19 in the BA, and incorporated here by reference, the action area includes the southern Sacramento-San Joaquin Delta and generally comprises the lands and waterways of the Delta southwest of the City of Stockton. Major waterways within the south Delta include the San Joaquin River, Old River, Middle River, Woodward and North Victoria canals, Grant Line and Fabian canals, Italian Slough, Tom Paine Slough and the adjoining canals of the Central Valley Project and the State Water Project. In addition, the action area not only encompasses the lands and waterways described above, but also includes the lands and waterways of the central Delta, including the lower San Joaquin River downstream of Old River, Columbia Cut and Turner Cut, and all reaches of Middle River and Old River as well as any adjoining sloughs and canals that are hydrologically connected to the channels described above.

The "environmental baseline" refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02). The environmental baseline is described on pages 60 through 68 in the BA, and is incorporated here by reference.

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

The BA provides a detailed discussion and comprehensive assessment of the effects of the Project, including construction related effects, acoustic disturbances, water quality impacts, predation, and far- and near-field hydrodynamic effects. This discussion and assessment appears in the Effects Assessment section on pages 69 through 103 of the BA, and is incorporated here by reference. NMFS has evaluated this section and after our independent, science-based evaluation determined it meets our regulatory and scientific standards.

Similarly, a thorough discussion and analysis of project related effects to designated critical habitat in the action area is presented in the Effects on NMFS-Managed Species Critical Habitat section on pages 96 through 103 of the BA, and is incorporated here by reference.

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Cumulative effects, including entrainment, contaminants, urbanization, bank protection, and climate change, are described on pages 101 through 103 in the BA, and are incorporated here by reference.

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action to the environmental baseline and the cumulative effects, taking into account the status of the species and critical habitat, to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

The combined effects of the Project will have multiple consequences on listed fish in the action area. The presence and operations of the agricultural barriers will increase the extent of mortality related to predation, delays in migration to the ocean, and exposure to degraded water conditions. These effects are expected to occur during the 7 months of the year when the agricultural barriers are installed (May 1 through November 30 each year). The remaining 5 months of the year will see only residual effects associated with habitat alterations incurred during the 7 months of barrier operation (e.g., changes in macroinvertebrate density and populations, extent of riparian and emergent vegetation levels, etc.).

The agricultural barriers will seasonally diminish or degrade designated critical habitat for CCV steelhead and the Southern DPS of North American green sturgeon, as well as habitat for CV spring-run Chinook salmon and Sacramento River winter-run Chinook salmon in the action area. Implementation of the proposed Project is expected to reduce the functionality of the physical or biological features of the designated critical habitat for CCV steelhead and the Southern DPS of North American green sturgeon in the south Delta. This will occur on a seasonal basis that will continue for an additional 5 years of implementing the proposed Project. Passage for emigrating CCV steelhead will still be possible through the main stem channel of the San Joaquin River, but will be diminished within the south Delta channels due to the presence of the agricultural barriers. While the majority of CCV steelhead generally migrate through the action area prior to the installation of the agricultural barriers, the survival of fish emigrating later in the spring when the barriers are installed is expected to be reduced by the effects of the Project. The Project is not anticipated to have any permanent impacts on critical habitat designated for CCV steelhead or the Southern DPS of North American green sturgeon.

For Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and CCV steelhead populations that are drawn into the south Delta and exposed to the operations of the barriers, mortality is expected to increase. The proportion of the total juvenile production for these Central Valley populations lost to the effects of the barriers is expected to be extremely low, based on the current estimates, and thus should not have any demonstrable effect on these populations.

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, California Central Valley steelhead, or the Southern DPS of North American green sturgeon, or destroy or adversely modify any of their designated critical habitats.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Harm” is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). “Harass” is further defined by interim guidance as to “create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.” “Incidental take” is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this incidental take statement (ITS).

Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

In this biological opinion, NMFS determined that the proposed action is reasonably certain to result in the incidental take of individual Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, CCV steelhead, and the Southern DPS of North American green sturgeon. Incidental take associated with this action is expected to be in the form of mortality, harm, or harassment of juvenile Sacramento River winter-run and Central Valley spring-run Chinook salmon, adult and juvenile CCV steelhead, and juveniles and sub-adults from the Southern DPS of North American green sturgeon. This incidental take is expected to occur as a result of exposure to the construction of the agricultural barriers in the spring. Some of the harm associated with this exposure could be the result of being crushed by the rock barrier material as it is deposited in the river, harassment from the generation of underwater noise associated with the construction process, increased vulnerability to predation, and the impedance of free migratory movements within the south Delta during the operational period of the agricultural barriers. Incidental take of juvenile Sacramento River winter-run and CV spring-run Chinook salmon, as well as both adult and juvenile CCV steelhead, is expected to occur during the period from May 1 to June 30, when individuals from these populations could potentially be present in the action area. Adult CCV steelhead are also expected to be present during the fall (September through November) to varying extents during their upstream spawning movements into the San Joaquin River basin. Juveniles and sub-adults from the Southern DPS of North American green sturgeon are expected to be present in the action area year round and would overlap with the 7-month operational period of the Project (May through November).

NMFS cannot, using the best available information, accurately quantify the anticipated incidental take of individual listed fish because of the variability and uncertainty associated with the population size of each species, annual variations in the timing of migration, and uncertainties regarding individual habitat use within the action area. However, it is possible to designate ecological surrogates for the extent of take anticipated to be caused by the Project, and to monitor those surrogates to determine the level of take that is occurring. The most appropriate ecological surrogates for providing a quantifiable metric for determining the extent of incidental take of listed fish caused by the construction and operation of the Project are: (1) the level of acoustic noise in the aquatic environment generated during the construction and removal phase for each barrier, (2) the extent and duration of turbidity increases in the aquatic environment relative to

environmental background conditions during construction and removal of the barriers, (3) the total size of the physical footprint of each barrier to be constructed, and (4) the period of time that each barrier will be in place during the year. Of these, the ultimate size of the constructed barriers and the amount of time that transpires from the beginning of construction through removal are the simplest metrics by which to verify adherence to the project description, whereas the measurements of acoustic noise and turbidity increases in the aquatic environment resulting from the construction and removal of the barriers can be consistently and accurately measured during Project implementation, and therefore serve as physically measurable proxies for the incidental take of listed fish.

Ecological Surrogates:

- The analysis of the effects of the proposed Project anticipates that the construction and removal of each barrier will result in acoustic noise generated in the aquatic environment that exceeds typical ambient background conditions for the action area. Based on the types of vehicles and equipment to be used, the methods described for construction and removal of the barriers, and the effects analysis conducted for this consultation, the amount of sound generated in the aquatic environment associated with the construction and removal of each barrier will not exceed 150 dB at a distance of 328 feet (100 meters) from the source activity at any time.

- The analysis of the effects of the proposed Project anticipates that the construction and removal of each barrier will result in increases to the ambient background levels of turbidity in the aquatic environment downstream from the barrier installation sites. Based on the types of materials to be used to construct the barriers, the methods described for construction and removal of the barriers, and the effects analysis conducted for this consultation, the observed increases in turbidity above ambient background conditions in the aquatic environment will not exceed 15 NTUs in successive samples at a distance of 328 feet (100 meters) upstream and downstream from the construction site.

- The final constructed footprint of each barrier will not exceed the dimensions or acreages of the barrier designs proposed on pages 9 through 14 of the BA, as follows:

    - MR – 270 feet long and 50 feet wide for a total area of approximately 0.31 acre as depicted in the BA Appendix A, Sheets C-101 and C-102,

    - ORT – 250 feet long and 60 feet wide for a total area of approximately 0.34 acre as depicted in the BA Appendix A, Sheets C-201 and C-202, and

    - GLC – 300 feet long and 100 feet wide for a total area of approximately 0.69 acre as depicted in the BA Appendix A, Sheets C-301 and C-302.

- Construction of the barriers will not begin before May 1st of each year, that each barrier will be completely removed from the channel by no later than November 30th of each year, and that the duration of in-water work to construct and remove the barriers will not exceed the maximum number of days proposed for the construction and removal of each barrier as presented in Table 2 on page 6 of the BA, as follows:

    - MR – 5 days for construction and 5 days for removal,

    - ORT – 20 days for construction and 20 days for removal, and

- GLC – 24 days for construction and 21 days for removal.

If the limits to the extent of incidental take represented by these ecological surrogates are not met and maintained, the proposed Project will be considered to have exceeded anticipated take levels, triggering the need to reinitiate consultation on the Project.

Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

"Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

1. The Corps and DWR shall avoid or minimize construction-related impacts associated with the implementation of the Project upon Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, CCV steelhead, and Southern DPS of North American green sturgeon.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. The Corps or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following terms and conditions implement reasonable and prudent measure 1:

    a. Monitoring of turbidity levels generated by the construction and removal of each barrier shall be conducted every four hours, at a minimum, during in-water work in order to verify that water quality criteria are not exceeded. The water quality criteria as required by the CVRWQCB 401 Water Quality Certification for the Project stipulates that observed increases in turbidity above ambient background conditions in the aquatic environment shall not exceed 15 NTUs in successive samples at a distance of 328 feet (100 meters) upstream and downstream from the construction site. If these levels are exceeded, NMFS shall be notified and work halted until corrective actions are instituted to achieve surface water quality criteria.

    b. Stockpiling of construction materials including rocks, gravel, flexible cement matting, portable equipment, vehicles and supplies, including chemicals and chemical containers, shall be restricted to designated construction staging areas and exclusive of the riparian areas.

c. All heavy equipment shall be fueled, maintained, and stored at a safe distance at least 50 feet away from any adjacent waterways. Standard construction best management practices shall be implemented so that no oil, grease, fuel or other fluids contaminate the waterways around the work sites.

d. Erosion control measures that prevent soil or sediment from entering the river during construction, or as a result of construction, shall be implemented and maintained throughout construction.

e. Any Chinook salmon, steelhead or green sturgeon found dead or injured within 0.1 mile upstream or downstream of construction sites during barrier installation shall be reported immediately to NMFS via email or by phone:

Attention Supervisor, NMFS California Central Valley Office
Email: ccvo.consultationrequests@noaa.gov
Phone: (916) 930-3600

A follow-up written notification shall also be submitted to NMFS which includes the date, time, and location that the carcass or injured specimen was found, a color photograph, the cause of injury or death, if known, and the name and affiliation of the person who found the specimen. Written notification shall be submitted to:

Supervisor, California Central Valley Office
National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento, California 95814
Email: ccvo.consultationrequests@noaa.gov

Any dead specimen(s) shall be placed in a cooler with ice and held for pick up by NMFS personnel or an individual designated by NMFS to do so.

f. Within 30 days of completing any construction activity associated with the Project, DWR shall submit a report to the Corps and NMFS (ccvo.consultationrequests@noaa.gov) describing the work that was performed, the starting and ending dates of the construction actions, any observed adverse effects to aquatic species and habitats and their duration (i.e., increased suspended sediment levels or turbidity, instances of pollution, unusual animal behaviors in adjacent waters, etc.), and any problems encountered during construction activities.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

1. The Corps and DWR should implement biotechnical measures in place of traditional revetment techniques should any of their projects' riprap begin to cause scour and require additional bank stabilization.

2. The Corps and DWR should conduct or fund studies to help quantify fish losses at water diversions throughout the Sacramento-San Joaquin Delta, and prioritize fish screen projects for future funding.

3. The Corps and DWR should continue to work cooperatively with other State and Federal agencies, private landowners, governments, and local watershed groups to identify opportunities for cooperative analysis and funding to support salmonid habitat restoration projects within the Delta region.

Reinitiation of Consultation

Under 50 CFR 402.16: "Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action."

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT CONSULTATION

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was conducted pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH (50 CFR 600.0-5(b)).

NMFS determined the proposed action would adversely affect EFH as follows: The proposed Project would have an adverse effect on EFH designated for northern anchovy, starry flounder, and Chinook salmon located in the TBP action area. The 1996 amendments to the Magnuson-Stevens Act require federal agencies to consult with NMFS regarding effects on EFH for those species managed under federal Fishery Management Plans (FMP). Northern anchovy, starry

flounder, and Chinook salmon are managed by the Coastal Pelagic Species FMP, the Pacific Coast Groundfish FMP, and the Pacific Coast Salmon FMP, respectively. A description and discussion of anticipated effects to EFH managed under the FMPs listed above are presented on pages 99 through 104 of the BA, and is incorporated here by reference. NMFS determined that no conservation recommendations are necessary to avoid, minimize, mitigate, or otherwise offsets the impact of the proposed Project on EFH. The Corps must reinitiate EFH consultation with NMFS if the proposed Project is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600. 920(l)). This concludes the MSA consultation.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The biological opinion will be available through NOAA Institutional Repository (https://repository.library.noaa.gov/). A complete record of this consultation is on file at the NMFS California Central Valley Office, in Sacramento, California.

Please direct questions regarding this letter to Douglas Hampton by telephone at (916) 930-3610, or by email at douglas.hampton@noaa.gov.

Sincerely,

A. Catherine Marcinkevage

Cathy Marcinkevage
Assistant Regional Administrator for
California Central Valley Office

Literature Cited:

ICF ESA Joint Venture. 2022. Programmatic Biological Assessment of Effects on Listed Fishes from the 2023–2027 Temporary Barriers Project. July. (ICF 103652.0.007.01.007) Sacramento, California. Prepared for California Department of Water Resources, Sacramento, California.

cc: ARN 151422-WCR2022-SA0053

Electronic copy only:
Mr. William McLaughlin, California Department of Water Resources, William.McLaughlin@water.ca.gov
Mr. Michael Vondergeest, ICF, Michael.Vondergeest@icf.com